UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,958	02/28/2004	Richard E. Harper	YOR920030494US1 (710.034)	6692

58127   7590   09/18/2008
FERENCE & ASSOCIATES LLC
409 BROAD STREET
PITTSBURGH, PA 15143

EXAMINER
MEHRMANESH, ELMIRA

ART UNIT	PAPER NUMBER
2113	

MAIL DATE	DELIVERY MODE
09/18/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _17 June 2008_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-43_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-43_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _28 February 2004_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

This action is in response to an amendment filed on June 17, 2008 for the

application of Harper et al., for an "Automatic crash recovery in computer operating

systems" filed February 28, 2004.

Claims 1-43 are pending in the application.

Claims 1, 17, 22, 23, 37, 42 and 43 have been amended.

Claims 1-10, 13-16, 18-30, 33-36, and 38-43 are rejected under 35 USC § 102.

Claims 11, 12, 17, 31, 32, and 37 are rejected under 35 USC § 103.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-10, 13-16, 18-30, 33-36, and 38-43 are rejected under 35 U.S.C. 102(e)

as being anticipated by Chaiken et al. (U.S. Patent No. 6,587,966).

As per claim 1, Chaiken discloses a method comprising:

providing automatic recovery from operating system faults, said providing

automatic recovery further comprising:

detecting an operating system fault (col. 6, lines 15-20)

analyzing the operating system fault; determining a cause of the an operating

system fault (col. 6, lines 47-50);

determining a solution (col. 6, lines 50-53);

and applying a solution (col. 6, lines 53-57).

As per claim 2, Chaiken discloses providing a resolution test and returning to

production (col. 6, lines 50-57).

As per claim 3, Chaiken discloses at least one of the recited steps does not

require any work (col. 6, lines 15-20).

As per claim 4, Chaiken discloses at least one of the recited steps does not

require any work (col. 6, lines 15-20).

As per claim 5, Chaiken discloses said detecting step comprises at least one of:

an operating system call to a halting routine and an exception or error associated with at

least one of: an operating system, middleware, firmware and Licensed Internal Code

(col. 5, lines 17-25).

As per claim 6, Chaiken discloses said detecting step comprises an abnormal

termination of a driver or application (col. 6, lines 50-62).

As per claim 7, Chaiken discloses said detecting step comprises a hypervisor observation of unusual behavior from a guest operating system (col. 6, lines 50-57).

As per claim 8, Chaiken discloses said detecting step comprises an interception of a call to an operating system halting routine or exception handler (col. 5, lines 17-25).

As per claim 9, Chaiken discloses said detecting step comprises automatically inspecting at least one aspect relating to the operating system (col. 6, lines 50-57).

As per claim 10, Chaiken discloses said detecting step comprises automatically inspecting at least one of: main memory; a kernel stack; process stacks; a state of all running threads; an amount of pageable memory used; an amount of pageable memory free for use; an amount of total pageable memory in the system; an amount of total pageable memory available to the operating system kernel; an amount of non-pageable memory used; an amount of Non-pageable memory free for use; an amount of total non-pageable memory in the system; an amount of total non-pageable memory available to the operating system kernel; a number of system page table entries used; a number of system page table entries available for use; an amount of virtual memory allocated to a system page table; a size of a system cache; a size of a page cache; a size of a file cache; an amount of space available in a system cache; an amount of space available in a page cache; an amount of space available in a file cache; a size of a system working set; a number of system buffers available; page sizes; a number of

network connections established; utilization of one or more central processing units; a

number of threads allocated; a percentage of time spent in a kernel; a number of

system interrupts per unit time; a number of page faults per unit time; a number of page

faults in a system cache per unit time; a number of paged pool allocations per unit time;

a number of non-paged pool allocations per unit time; a length of look-aside lists; a

number of open file descriptors; an amount of free space on a disk or disks; a

percentage of time spent at interrupt level; a number of device drivers that are loaded;

status of loaded device drivers; a number of outstanding I/O requests for device drivers;

a state of devices attached to the system (col. 6, lines 50-57).

As per claim 13, Chaiken discloses said step of automatically inspecting is

performed via software (col. 6, lines 63-67).

As per claim 14, Chaiken discloses said step of determining a cause comprises

identifying at least one faulty component (col. 6, lines 53-62).

As per claim 15, Chaiken discloses said analyzing step provides input into said

step of determining a cause (col. 6, lines 50-57).

As per claim 16, Chaiken discloses external information provides input into said

step of determining a cause (col. 6, lines 50-57).

As per claim 18, Chaiken discloses said step of effecting one or more changes or updates comprises deactivating faulty software (col. 6, lines 53-62).

As per claim 19, Chaiken discloses said step of providing a resolution test comprises monitoring a new component during a trial period (col. 5, lines 11-25).

As per claim 20, Chaiken discloses the trial period is over a finite period of time (col. 5, lines 11-25).

As per claim 21, Chaiken discloses the status of the new component is reported subsequent to the trial period (col. 5, lines 11-25).

As per claim 22, Chaiken discloses at least one of the following steps is repeated upon determination of a negative status of the new component:

detecting an operating system fault (col. 6, lines 15-20);

analyzing the operating system fault; determining a cause of the an operating system fault (col. 6, lines 47-50);

determining a solution (col. 6, lines 50-53);

applying a solution (col. 6, lines 53-57);

and providing a resolution test (col. 6, lines 50-57).

As per claim 23, Chaiken discloses an apparatus comprising:

an arrangement for providing automatic recovery from operating system faults,

said providing automatic recovery further comprising:

an arrangement for detecting an operating system fault (col. 6, lines 15-20)

an arrangement for analyzing the operating system fault; an arrangement for

determining a cause of the an operating system fault (col. 6, lines 47-50);

an arrangement for determining a solution (col. 6, lines 50-53);

and an arrangement for applying a solution (col. 6, lines 53-57);

wherein the apparatus utilizes a processor to provide the automatic recovery

(Fig. 2).

As per claim 24, Chaiken discloses an arrangement for providing a resolution test

and an arrangement for returning to production (col. 6, lines 50-57).

As per claim 25, Chaiken discloses said detecting arrangement is adapted to

provide at least one of: an operating system call to a halting routine and an exception or

error associated with at least one of: an operating system, middleware, firmware and

Licensed Internal Code (col. 5, lines 17-25).

As per claim 26, Chaiken discloses said detecting arrangement is adapted to

provide an abnormal termination of a driver or application (col. 6, lines 50-62).

As per claim 27, Chaiken discloses said detecting arrangement is adapted to

provide a hypervisor observation of unusual behavior from a guest operating system

(col. 6, lines 50-57).

As per claim 28, Chaiken discloses said detecting arrangement is adapted to

provide an interception of a call to an operating system halting routine or exception

handler (col. 5, lines 17-25).

As per claim 29, Chaiken discloses said detecting arrangement is adapted to

automatically inspect at least one aspect relating to the operating system (col. 6, lines

50-57).

As per claim 30, Chaiken discloses said detecting arrangement is adapted to

automatically inspect at least one of: main memory; a kernel stack; process stacks; a

state of all running threads; an amount of pageable memory used; an amount of

pageable memory free for use; an amount of total pageable memory in the system; an

amount of total pageable memory available to the operating system kernel; an amount

of non-pageable memory used; an amount of Non-pageable memory free for use; an

amount of total non-pageable memory in the system; an amount of total non-pageable

memory available to the operating system kernel; a number of system page table

entries used; a number of system page table entries available for use; an amount of

virtual memory allocated to a system page table; a size of a system cache; a size of a

page cache; a size of a file cache; an amount of space available in a system cache; an amount of space available in a page cache; an amount of space available in a file cache; a size of a system working set; a number of system buffers available; page sizes; a number of network connections established; utilization of one or more central processing units; a number of threads allocated; a percentage of time spent in a kernel; a number of system interrupts per unit time; a number of page faults per unit time; a number of page faults in a system cache per unit time; a number of paged pool allocations per unit time; a number of non-paged pool allocations per unit time; a length of look-aside lists; a number of open file descriptors; an amount of free space on a disk or disks; a percentage of time spent at interrupt level; a number of device drivers that are loaded; status of loaded device drivers; a number of outstanding I/O requests for device drivers; a state of devices attached to the system (col. 6, lines 50-57).

As per claim 33, Chaiken discloses said detecting arrangement is adapted to perform automatic inspecting via software (col. 6, lines 63-67).

As per claim 34, Chaiken discloses said arrangement for determining a cause is adapted to identify at least one faulty component (col. 6, lines 53-62).

As per claim 35, Chaiken discloses said analyzing arrangement provides input into said arrangement for determining a cause (col. 6, lines 53-57).

As per claim 36, Chaiken discloses external information provides input into said arrangement for determining a cause (col. 6, lines 53-57).

As per claim 38, Chaiken discloses said arrangement for effecting one or more changes or updates is adapted to deactivate faulty software (col. 6, lines 50-62).

As per claim 39, Chaiken discloses said arrangement for providing a resolution test comprises monitoring a new component during a trial period (col. 5, lines 11-25).

As per claim 40, Chaiken discloses the trial period is over a finite period of time (col. 5, lines 11-25).

As per claim 41, Chaiken discloses said arrangement for providing a resolution test is adapted to report the status of the new component subsequent to the trial period (col. 5, lines 11-25).

As per claim 42, Chaiken discloses at least one of the following is repeated upon determination of a negative status of the new component (col. 5, lines 11-25):

    detecting an operating system fault (col. 6, lines 15-20);

    analyzing the operating system fault; determining a cause of the an operating system fault (col. 6, lines 47-50);

    determining a solution (col. 6, lines 50-53);

applying a solution (col. 6, lines 53-57);

and providing a resolution test (col. 6, lines 50-57).

As per claim 43, Chaiken discloses a program storage device readable by

machine, tangibly embodying a program of instructions executable by the machine to

perform method steps for providing automatic recovery from operating system faults

(col. 6, lines 15-20), said method comprising the steps of:

providing automatic recovery from operating system faults, said providing

automatic recovery further comprising:

detecting an operating system fault (col. 6, lines 15-20)

analyzing the operating system fault; determining a cause of the an operating

system fault (col. 6, lines 47-50);

determining a solution (col. 6, lines 50-53);

and applying a solution (col. 6, lines 53-57).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating
       obviousness or nonobviousness.

Claims 11, 12, 17, 31, 32, and 37 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Chaiken et al. (U.S. Patent No. 6,587,966) in view of Cantrill (U.S.

Patent No. 6,523,141).

As per claims 11 and 31, Chaiken discloses detecting a malfunctioning device or

process (col. 6, lines 50-62). However Chaiken fails to explicitly disclose memory

corruption.

Cantrill teaches:

automatically inspecting comprises determining a degree of memory corruption

(Fig. 2-3).

It would have been obvious to one of ordinary skill in the art at the time of the

invention to use the method of operating system fault detection of Chaiken et al. in

combination with the memory leak detection system of Cantrill to effectively recover

from operating system faults.

One of ordinary skill in the art at the time of the invention would have been motivated to make the combination because both inventions disclose detecting operating system crashes (Chaiken, col. 6, lines 15-20) and (Cantrill, col. 4, lines 46-49). Chaiken discloses of polling devices to detect a malfunctioning device or process after the detection of an operating system hang condition (col. 6, lines 50-62). However Chaiken does not disclose specific malfunctioning devices or processes. Cantrill discloses detecting memory leaks after detection of an operating system hang condition (col. 4, lines 46-49).

As per claims 12 and 32, Cantrill discloses manual fault resolution is prompted if memory corruption is detected (Fig. 3).

As per claims 17 and 37, Cantrill discloses said step of applying a solution comprises effecting one or more changes or updates in at least one of: device driver software, and firmware; wherein said solution is automatically downloaded and installed (col. 6, lines 30-32) and (col. 9, lines 16-20).

Response to Arguments

Applicant's arguments filed June 17, 2008 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1 .136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1 .136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Elmira Mehrmanesh whose telephone number is (571)

272-5531. The examiner can normally be reached on 9-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Robert W. Beausoliel can be reached on (571) 272-3645. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

/Robert W. Beausoliel, Jr./

Supervisory Patent Examiner, Art Unit 2113